

### ABSTRACT OF THE INVENTION

A system and method for actively damping boom noise within an enclosure such as an automobile cabin. The system comprises an acoustic wave sensor, a motion sensor, an acoustic wave actuator, a first electronic feedback loop, and a second  
5 electronic feedback loop. The enclosure defines a plurality of low-frequency acoustic modes that can be induced/excited by the enclosure cavity, by the structural vibration of a panel of the enclosure, by idle engine firings, and a combination thereof. The acoustic wave actuator is substantially collocated with the acoustic wave sensor within the enclosure. The motion sensor can be secured to a panel of the enclosure.